Very Large Solar Rejection Filter for Laser Communication, Phase II

Completed Technology Project (2009 - 2012)

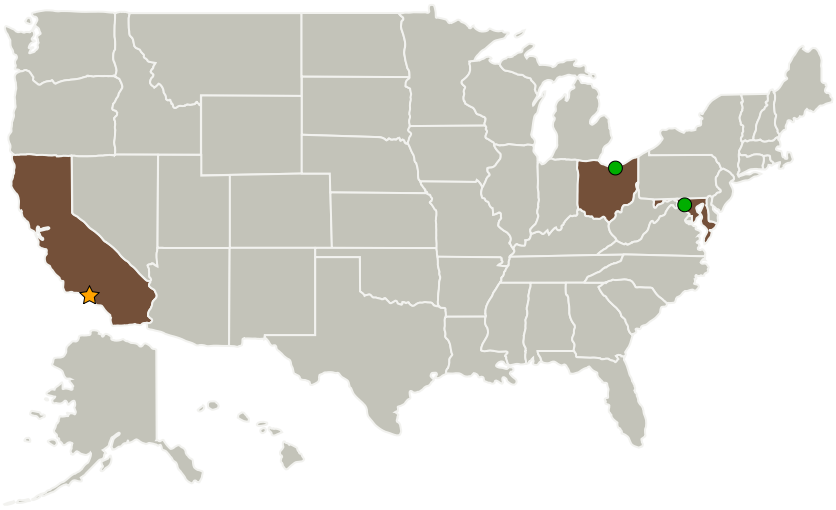
Project Introduction

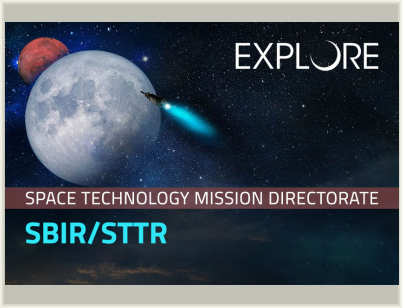
Surface Optics Corporation (SOC) will develop a band pass filter comprised of a visible dielectric mirror and an induced transmission filter, applied to two sides of a cast polyimide membrane. The mirror/filter combination will block 95% of the incident solar radiation, while allowing a narrow pass-band for laser communication.

Anticipated Benefits

This research will benefit future NASA programs requiring interplanetary laser communication. High quality membranes coated with precision optical coatings may be useful for large ground-based, segmented telescopes such as TMT and Hobby-Eberly. Although the concept is still in its infancy, a coating transferred to a glass segment via a polymer membrane would be analogous to tinting an automobile car window. Preliminary evaluations indicate a membrane with less than lambda/6 PTV error, may be useful for segmented mirror systems with active correction. A coating transfer process would eliminate the need for a segment assembly containing motors, controllers, and actuators, from being placed in a vacuum chamber for periodic recoating.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
●Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
●Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland
Surface Optics Corporation	Supporting Organization	Industry	San Diego, California

Primary U.S. Work Locations	
California	Maryland
Ohio	

Project Transitions

February 2009: Project Start

January 2012: Closed out

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Gary C Jahns

Principal Investigator:

Michael Fulton

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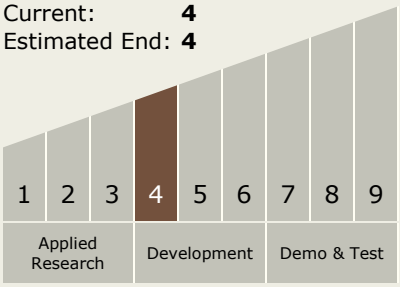
Completed Technology Project (2009 - 2012)

Technology Maturity (TRL)

Start: **4**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.1 Mirror Systems